



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
LSASD/HWSB/HWSS
2890 Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 49917

Site: New Cassel/Hicksville GW contamination

Number of Samples: 1 (GW), 2 (EB/FB), 1 (TB)

Analysis: TVOA, TVOA-SIM (MA # 3138.0)

SDG No.: BGJP9

Laboratory: Analytical Resources, LLC

Sampling dates: 04/14/2022

Validation SOP: QA-HWSS-A-004 (Rev 0)

QAPP:

Contractor: HDR APTIM

Reference: DCN: 10256504-0, April 2022

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

None

Major Findings:

None

Minor Findings:

One or more analytes in one or more samples are qualified "J" due to results between MDL and CRQL.

COMMENTS: Per request in ARF, summary reports were created without project action levels.

Reviewer Name(s): Raxa J. Shelley

Approver's Signature: *Russell Arnone*

Date: 05/19/2022

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: TVOA/TVOA-SIM (MA # 3138.0)

The current SOP QA-HWSS-A-004 (Rev 0) March 2022, USEPA Region II for the evaluation of Trace Volatile organic data, and all related Change Request Forms (CRF) for this SOP, generated through Statement of Work SFAM01.1, and any future editorial revisions of SFAM01.1 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report. Tentatively Identified Compounds (TICs) for TVOA organic fraction is not validated.

1. HOLDING TIME AND PRESERVATION:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those detected and non-detected analytes in the samples whose holding time has been exceeded will be qualified as per Table 2 of QA-HWSS-A-004 (Rev 0). Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. DEUTERATED MONITORING COMPOUNDS (DMC's):

All samples are spiked with DMC compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured DMC recovery limits were outside the specified limits in Table 10 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17), qualifications were applied as per Table 8 of the SOP QA-HWSS-A-004 (Rev 0) to all the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/ MATRIX SPIKE RECOVERY:

MS/MSD data is generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other QC criteria for additional qualification of data.

Not applicable

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the amount of contamination present in the QA blanks, the analytes are qualified as per Table 7 of SOP QA-HWSS-A-004 (Rev 0).



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A) Method blank contamination:

TVOA:

No problems were found for this criterion.

TVOA-SIM:

No additional qualification is required due to the method blank contamination because the contamination in the method blank has been qualified in the field blank contamination section.

B) Field or rinse blank contamination: BGJQ0, BGJQ1

TVOA:

The following sample has analyte results reported less than the CRQL. The associated equipment blank result is greater than or equal to the CRQL. Detects are qualified U. Sample results have been reported at the CRQL.

Acetone BGJP9

TVOA-SIM:

The following sample has analyte results reported less than the CRQL. The associated equipment blank result is less than the CRQL. Detects are qualified U. Sample results have been reported at the CRQL.

cis-1,3-Dichloropropene BGJP9

C) Trip blank contamination: BGJQ2

TVOA:

No problems were found for this criterion.

TVOA-SIM:

No additional qualification is required due to the trip blank contamination because the contamination in the trip blank has been qualified in the field blank contamination section.

D) Storage Blank associated with TVOA samples only:

TVOA:

No problems were found for this criterion.

TVOA-SIM:

No additional qualification is required due to the storage blank contamination because the contamination in the storage blank has been qualified in the field blank contamination section.

E) Tentatively Identified Compounds:

Tentatively Identified Compounds (TICs) for TVOA organic fraction are not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using



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standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene. If the mass calibration is in error, all associated data will be classified as unusable "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. All analytes for initial, ICV and continuing calibration should meet the minimum RRF criteria as listed in Table 4 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17). If RRF is less than minimum RRF specified in the Table 4, all detects in the sample will be qualified as estimated "J" and non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration.

Percent RSD must be less than maximum %RSD in Table 4 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17) for all target analytes. For the opening or closing CCV %D must be within the inclusive opening or closing maximum %D limits as listed in Table 4 of SOW SFAM01.1 (Exhibit D, trace level volatile analysis, Section 17) for all Target compounds. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are qualified as estimated, "J" and Non-detects are qualified "UJ" for %D values outside criteria only. If %RSD exceeds QC criteria, detects are qualified as "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count and retention time must be in the range as specified in Table 10 of SOP QA-HWSS-A-004 (Rev 0) of the associated continuing calibration internal standard area. If the internal standard area count and retention time were outside the specified limits in Table 10 of SOP QA-



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HWSS-A-004 (Rev 0), qualifications will be applied to the results for compounds quantitated with that IS as per Table 10 of SOP QA-HWSS-A-004 (Rev 0). Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. FIELD DUPLICATES:

No field duplicate sample was identified in this SDG.

9. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within a window of 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/z intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

10. CONTRACT PROBLEMS NON-COMPLIANCE:

None

11. FIELD DOCUMENTATION:

No problems were identified.

12. OTHER PROBLEMS:

TVOA:

None

TVOA-SIM:

It was noted that Internal Standard Area and Retention Time reported on Data Validation Report IS and RT summary form do not match with hard copy raw data quantitation report for samples and blanks. Based on a review of the raw data, it appears that IS area and RT are not reported with correct associated IS and are reported incorrectly in the summary form from SMO Portal. Additionally, the order of the second and third IS reported incorrectly on IS and RT summary form. It should be reported as in order of first IS 1,4-Difluorobenzene, second IS Chlorobenzene-d5 and third IS 1,4-Dichlorobenzene-d4. Laboratory was contacted through SMO. SMO is currently performing troubleshooting and analysis on this issue and waiting for the revised EDD from the laboratory. The Internal Standard Area and Retention Time for this SDG were manually checked by using associated raw data for samples and blanks and were within the required limits. The quantitation of the results were not affected and sample data has been quantitated correctly.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:



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Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used. See summary report and EDD for applicable samples and analytes.